



# Distributed Renewable Generation



**Presented to:** PUCT Project 35792 Workshop  
Austin, Texas  
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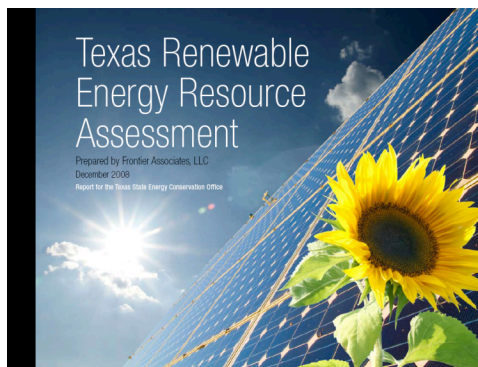
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# ***Subsidies***

# ***Texas Energy Subsidies***

***Oil & Gas: 99.6%***

***All Other: 0.4%***



## **State and Local Subsidies**

At the state and local level, Texas provided approximately \$1.4 billion in direct financial subsidies to renewable and non-renewable energy sources in 2006, almost all of which, 99.6 percent, went to oil and gas production. The remaining

Source: Texas Comptroller (2008)



**Public Utility Commission of Texas says:**

**“Wind generation  
has had the impact  
of reducing  
wholesale and retail  
prices of electricity.”**

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Source: PUCT Scope of Competition in Electric Markets in Texas Report, January 2009 (p. 65)



**VERA**

## Texas RPS: More Benefit than Cost

**Cost = about 9 cents per customer**  
**Benefit = about \$5.00 per customer**

**2009 Report: Scope of Competition in Electric Markets (pp. 64-66)**

For a typical residential customer using 1,200 kWh of electricity per month, the impact of the renewable energy goal was equivalent to about **9 cents per month in 2008**.

For **each additional 1,000 MW of wind** that was produced, the analysis showed that the clearing price in the balancing energy market fell by **\$2.38**.

25.173(h)(1)(C): “2,392 MW of new resources in 2008”

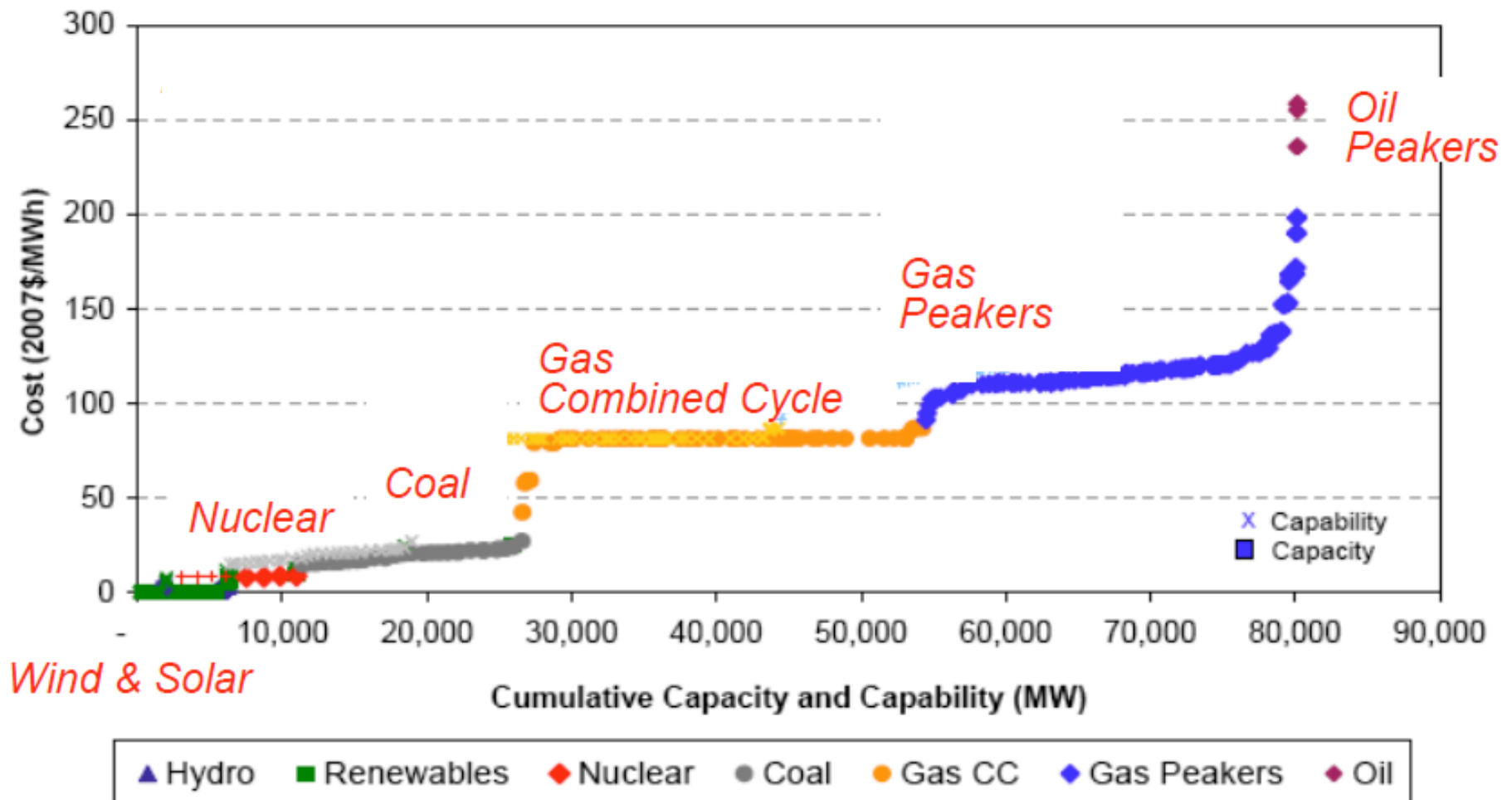
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Source: PUCT [http://www.puc.state.tx.us/electric/reports/scope/2009/2009scope\\_elec.pdf](http://www.puc.state.tx.us/electric/reports/scope/2009/2009scope_elec.pdf)



# ERCOT “Marginal Cost” Supply Curve

Exhibit 25: 2008 ERCOT Supply Curve



Source: Pace

# ***Diversity ?***

## New Renewable MW in Texas REC Program - 2010

RESOURCE

QUANTITY IN REC PROGRAM

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<b>Wind</b>	<b>9,914.6 MW</b>	<b>98.5 %</b>
<b>Landfill Gas</b>	<b>80.3 MW</b>	<b>0.8%</b>
<b>Biomass</b>	<b>40.3 MW</b>	<b>0.4%</b>
<b>Hydro</b>	<b>33.1 MW</b>	<b>0.3%</b>
<b>Solar</b>	<b>1.2 MW</b>	<b>0.01%</b>
<i>Small Wind</i>	<i>none ?</i>	

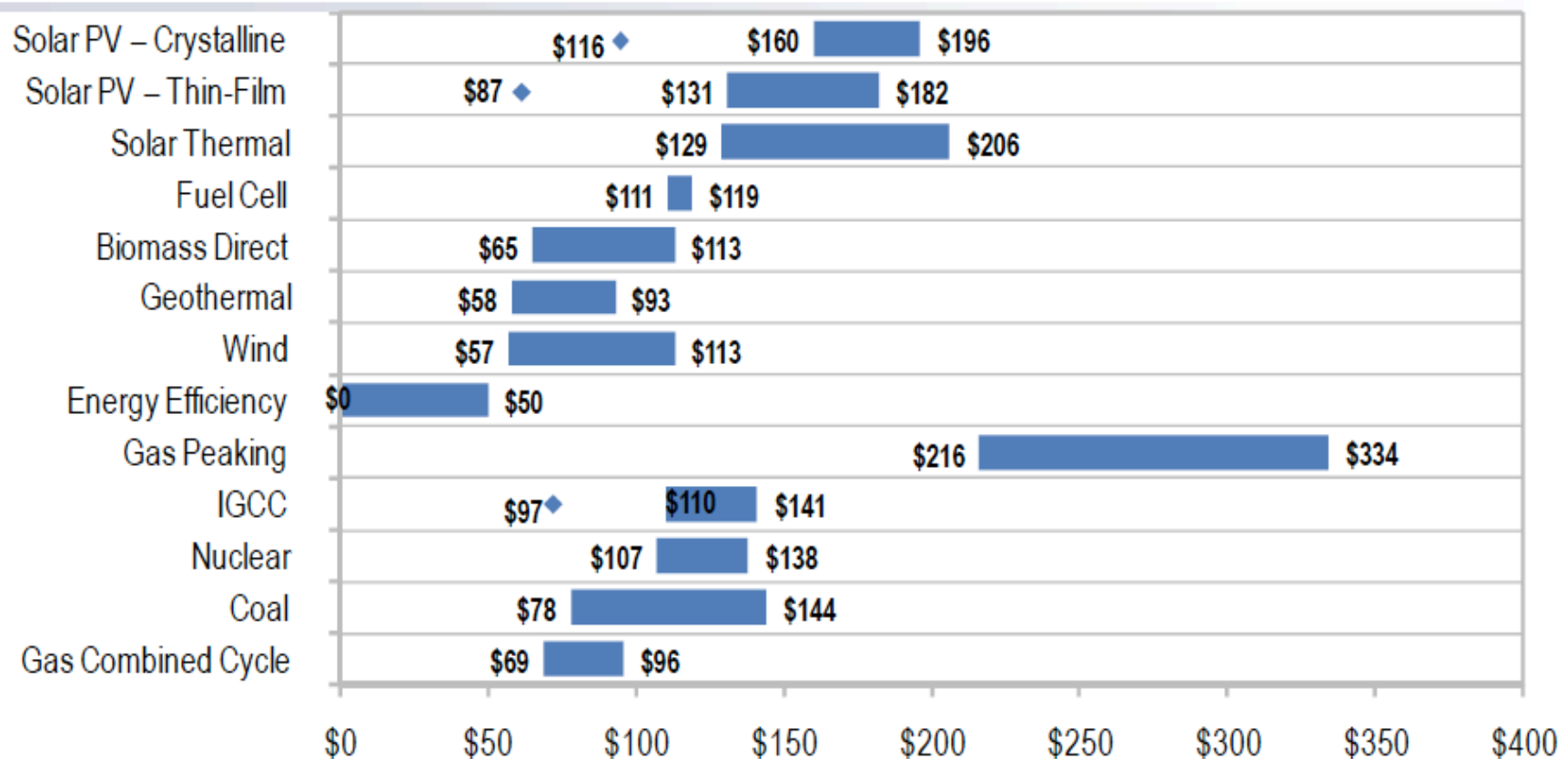
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Source: ERCOT 3/31/10, <https://www.texasrenewables.com/publicReports/rpt5.asp>



# ***Different Technologies: Different Costs***

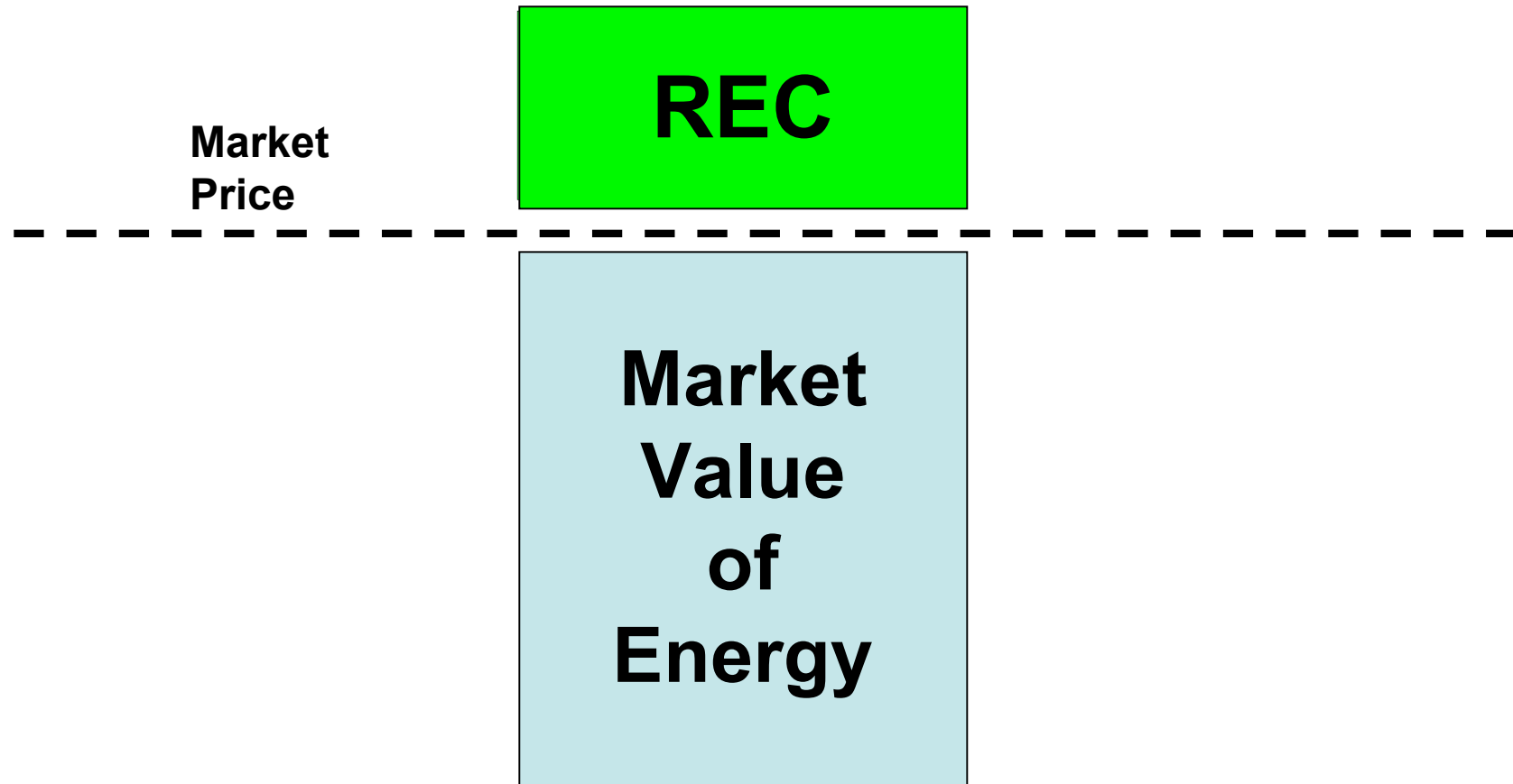
Levelized Cost of Energy - \$/MWh



Source: Lazard, 2009

Source: Pat Wood III, Feb 2010

# Value Components of Texas Renewable Energy



***Top Tier:  
DRG or Solar ?***

# Issues for Top Tier for Solar

***Why depart from  
“technology-neutral”?***

***What are the merits?***

***What’s included in “Solar”  
(Solar swimming pool heaters?)***

# Merits of Distributed Renewable Generation

*Energy where needed*

*Less Infrastructure*

*Most Jobs Benefit*

*Customer Choice*

# Texas Renewables: Cost & Benefit

RESOURCE

QUANTITY IN REC PROGRAM

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**RPS RECs (2008) about \$ 20 million/yr**

**RPS RECs (2015) about 15 million RECs**

**Future Cost & Benefit (CREZ)**

**Infrastructure \$ 800 million/yr**

**Energy Savings \$ 3,346 million/yr**

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*Source: ERCOT 3/31/10*



# ***1999 Texas SB7***

Electric Industry Reform

**Competitive Markets**

**Customer Choice**

# ***Include Small Wind ?***



***What was Legislative Intent  
of “Non-Wind” Target?***

***To Limit Wind Power  
Or  
Encourage Diversity***

## PURA Sec. 39.904 (o)

- Permissive ACP language (5 uses of “may”)
- Only 1 use of “shall”:

“In implementing this subsection, the commission shall consider: ..... (4) any other factors necessary to ensure the **continued development of the renewable energy industry in this state while protecting ratepayers from unnecessary rate increases.**”

## Small Wind: What others do

- The federal government offers the same incentives (ITC) for small wind as it does for solar and both have a different subsidy than large wind (PTC).
- Most states with system benefit charge based rebates for customer-sited renewables offer incentives for both solar and small wind.
- Most states with distributed generation carve-outs in their RPS mandates include small wind as an eligible technology.

## Examples of PUCT “filling in gaps” in RPS

***Goal (MW) - REC (MWh)***

***RPS - allows out-of-state RE***

***2003 - 2002 compliance required***

***“Solar Only” Tier contemplated***

***DRG =  
Customer  
Choice***